What is claimed is:

[Claim 1] A method for preparing an area for fabrication of a metal gate electrode with multiple work functions, the method comprising the steps of:

depositing a material having a first work function;
forming a conductive hard mask including one of a metal containing conductor and a metal silicide over the material;
using a photoresist mask to remove the conductive hard mask from an area for a device having a second, different work function selective to the material; and
removing the photoresist mask, leaving the conductive hard mask for use in removing the material from the area and inclusion in the metal gate electrode.

[Claim 2] The method of claim 1, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide ($TiSi_x$), tantalum silicide ($TaSi_x$), nickel silicide (NiSi), cobalt silicide ($CoSi_x$), and the metal containing conductor includes one of tantalum nitride (TaN) and tantalum silicon nitride (TaSiN).

[Claim 3] The method of claim 1, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.

[Claim 4] The method of claim 3, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

[Claim 5] The method of claim 1, wherein the photoresist removing step includes conducting a wet etch using a chemistry including at least one of sulfuric acid (H_2SO_4) and peroxide (H_2O_2).

[Claim 6] A method of forming a gate electrode, the method comprising the steps of:

forming a gate dielectric;
depositing a first metallic conductor having a first work function;

depositing a conductive hard mask on the first metallic conductor including one of a conductor and a metal silicide;
removing the conductive hard mask from an area for a particular device type using a photoresist mask selective to the first metallic conductor;
removing the photoresist mask;
removing the first metallic conductor in the area with the conductive hard mask protecting the first metallic conductor;
depositing a conductor; and
forming the gate electrode.

[Claim 7] The method of claim 6, wherein the conductor depositing step includes depositing a second metallic conductor having a different, second work function, and depositing a silicon-containing conductor.

[Claim 8] The method of claim 6, wherein the conductor depositing step includes depositing a silicon-containing conductor.

[Claim 9] The method of claim 8, wherein the first metallic conductor includes a p-type metal, and the silicon-containing conductor is highly doped n-type.

[Claim 10] The method of claim 6, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide ($TiSi_x$), tantalum silicide ($TaSi_x$), nickel silicide (NiSi), cobalt silicide (CoSix), and the metal containing conductor includes one of tantalum nitride (TaN), tantalum silicon nitride (TaSiN).

[Claim 11] The method of claim 6, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.

[Claim 12] The method of claim 11, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

[Claim 13] The method of claim 6, wherein the conductive hard mask removing step includes conducting one of a wet etch and a reactive ion etch.

[Claim 14] The method of claim 6, wherein the photoresist mask removing step includes conducting

a wet etch using a chemistry including at least one of sulfuric acid (H_2SO_4) and peroxide (H_2O_2).

[Claim 15] The method of claim 14, wherein the first metallic conductor removing step includes using the wet etch.

[Claim 16] A method of forming a metal gate electrode with multiple work function, the method comprising the steps of:

depositing a dielectric on a substrate;
depositing a first metallic conductor having a first work function over the dielectric;
depositing a conductive hard mask on the first metallic conductor including one of a conductor and a metal silicide;
removing the conductive hard mask from an area for a particular device type using a photoresist mask;
removing the photoresist mask to a remaining portion of the conductive hard mask;
removing the first metallic conductor in the area using the conductive hard mask to protect the first metallic conductor;
depositing a second metal having a second, different work function in the area;
depositing a silicon-containing conductor over the first and second metals; and
forming the metal gate electrode.

[Claim 17] The method of claim 16, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide ($TiSi_x$), tantalum silicide ($TaSi_x$), nickel silicide (NiSi), cobalt silicide ($CoSi_x$), and the metal containing conductor includes one of tantalum nitride (TaN), tantalum silicon nitride (TaSiN).

[Claim 18] The method of claim 16, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.

[Claim 19] The method of claim 18, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

[Claim 20] The method of claim 16, wherein the conductive hard mask removing step includes conducting one of a wet etch and a reactive ion etch.